Wisconsin
Department of Commerce

Evaluation # 200402-R (Replaces 970062-R)

Safety & Buildings Division
201 West Washington Avenue
P.O. Box 2658
Madison, WI 53701-2658

Wisconsin
Building Products Evaluation

Material: Precast Concrete, Insulated Foundation Wall System

Manufacturer: Superior Walls of America, Ltd.
937 E. Earl Rd.
New Holland, PA 17557

Additional Listees: Guyers Superior Walls
580 Schommer Drive
Hudson, WI 54016

Superior Walls of Greater Chicago
1050 South Lake Street
Aurora, IL 60506

SCOPE OF EVALUATION

GENERAL: This report evaluates the precast concrete, insulated foundation wall system, manufactured by Superior Walls of America, Ltd.

This review includes the cited **Comm** code requirements below in accordance with the current **Wisconsin Uniform Dwelling Code (UDC), (for 1 & 2 family dwellings):**

- **Structural Requirements:** The precast concrete, insulated foundation wall system was evaluated in accordance with the structural requirements of **ss. Comm 21.02**, **21.18(1)** and **(2)**.
- **Foam Plastic Requirements:** The precast concrete, insulated foundation wall system was evaluated in accordance with the foam plastic requirements of **s. Comm 21.11(2)**

Note: The energy conservation requirements of **Chapter Comm 22** have not been evaluated. Insulation R-value, heat loss calculations, etc., must be submitted on a job-by-job basis in accordance with **s. Comm 20.09(4)**.

DESCRIPTION AND USE

General Structural: Superior Walls are precast concrete, insulated foundation walls, for use in one- and two-family homes. The system consists of a 1-3/4 inches exterior face shell with fibermesh, a continuous top ledger and a 10-1/4 inches wide precast footing, 2-1/4 inches by 6-3/4 inches concrete studs at 2 feet on center and 1-inch interior insulation consisting of extruded polystyrene by Dow Chemical or rigid fiberglass.

Pressure treated wood nailer comes attached to the interior face of the precast studs for support of the interior finish. Access holes, 1-inch in diameter are cast into the web of the precast studs for plumbing and electrical wiring. A porous layer of gravel, crushed stone or sand shall be placed under basement floor slab and the precast footing to a thickness as required for the soil bearing capacity, but not less than 4-inches. In some cases a drained gravel trench footing is used. Perimeter drain tile is required.

The exterior panel joints are to be continuously caulked and damp-proofed with a sealant specified by Superior Walls of America, Ltd., and damp-proofed to meet the requirements of **s. Comm 21.18(3) (a)4**. The damp-proofing and waterproofing are integral part in the design mix of the concrete and insulation.

The precast wall footing is to be braced by a concrete basement floor slab and the top ledger beam braced by the first floor construction prior to back filling. Where floor joists run parallel to the walls, structural bracing or bridging shall be used between the floor joists to resist the backfill pressure in accordance with the manufacturer's recommendations.

Where a concrete floor slab is not installed, as in crawl space applications, the wall shall be braced in accordance with the manufacturer's recommendations.

The Styrofoam® Brand, Dow Blue Board is an extruded polystyrene foam product designed for use as nonstructural sheathing. The board is installed in a single layer. The type of board used is Styrofoam® Brand Square Edge 1"x 48" wide.

TESTS AND RESULTS

Structural and Wind: Load test analysis of a wall unit to analyze tension in the face shell was done. An ultimate tension stress on the panel face shell of 248 psi was determined from the 194 psf uniform load in combination with the 1500 pounds per foot force from the tension rods. Ultimate tension stress is divided by 2.5 obtaining the allowable tension stress of 99 psi on the panel.

The Superior Wall panels will safely support anticipated tension stresses in the face shell due to eccentric gravity loads and suction forces from a 100 mph wind. The panels will also safely support the wind forces from a 110 mph wind depending on the magnitude and location of the gravity loads. Test and results are on file with the department.

Fire Test: A test specimen consisting of a panel 1-3/4 inch thick face of 5000 psi concrete, covered on the interior with a 1-inch thick layer of EPS board was tested in accordance with ASTM E119. The wall assembly met the requirements of ASTM E119 Fire Tests of Building Materials for a load bearing (6000 pounds total force per stud) fire resistance rating of 120 minutes.

Omega Point Laboratories conducted a room corner fire test according to UBC 26-3 "Room Fire Test Standard for Interior of Foam Plastic Systems". **Results:** the sample submitted, installed, and tested displayed very light if any smoke and no flame spread characteristics. The foam at the extremities was melted slightly, leaving behind a ½-inch layer of foam near the top of the room. Based on these results, the specimen met the requirements of UBC 26-3.

LIMITATIONS OF APPROVAL

The **Comm** limitations below are in accordance with the current the **Wisconsin Uniform Dwelling Code (UDC), (for 1 & 2 family dwellings):**

A thermal barrier in **s. Comm 21.11 (2)** shall not be required if installed in accordance with the UBC 26-3 Room Fire Test standard for interior finish of foam plastic systems.

Installation shall be in strict accordance with the manufacturer's instructions.

The energy conservation requirements of **Chapter Comm 22** have not been evaluated. Insulation R-value, heat loss calculations, etc., must be submitted on a job-by-job basis in accordance with **s. Comm 20.09 (4)**.

In lieu of the drain tile requirements of **s. Comm 21.17**, the Superior Walls of America, Ltd., system may be installed with "drainage pipe or tile on either side of the foundation walls; preferably with the drainage pipe or tile laid inside the foundation walls. If the drainage pipe or tile is laid inside the foundation walls ; filter membranes shall not be required. If drainage pipe or tile is laid outside the foundation walls; then filter membranes shall be required.

MATERIAL and INSTALLATION REQUIREMENTS:

- Drain tile or pipes used for foundation drainage shall be at least 3 inches inside diameter.
- Where individual tiles are used, they shall be laid with 1/8-inch open joints. Joints between the tiles shall be covered with a strip of sheathing paper or asphalt or tar saturated felt.
- **When tile or pipe are installed inside or outside the wall system**, they shall be placed on the soil; and when installed on the outside they shall be covered with a filter membrane.
- The washed rock sub-footing shall meet the following criteria:

    1. 90-100% of the rock must pass a ¾-inch sieve; and
    2. 20-25% of the rock must pass a 3/8-inch sieve.
    3. The washed gravel shall be at least 4 inches deep.

- **Tile or pipe shall be installed 12-inches from the foundation walls, inside or outside**.
- The drain tiles or pipe that lead from the footing tiles to the sump pit or natural grade shall be laid at a grade of not less than 1/8-inch per foot leading to the sump pit or natural grade. The remaining drain tiles or pipe shall be level or graded downward to a line that leads to the sump.
- **DRAIN TILE DISCHARGE.** Drain tiles shall be connected to a sump pit or daylight. The sump shall discharge to natural grade or be equipped with a pump to discharge water away from the dwelling via surface drainage channels.

This approval will be valid through December 31, 2009, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The product approval is applicable to projects approved under the current edition of the applicable codes. This approval may be void for project approvals made under future applicable editions. The Wisconsin Building Product Evaluation number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement not specified in this document.

Revision Date:
Approval Date: March 10, 2004 By: _____

Lee E. Finley, Jr.
Product & Material Review
Integrated Services Bureau

200402-R.doc